Work Order ID 89529

August-24-12 10:02:36 AM

89529

Item ID: D4640-15 **Accept** *N900040100* **Setup Start** *NS1*

Revision ID: **Stop** *NS2*

Item Name: Ceiling Protector

Start Date: 8/24/12 **Start Qty:** 10.00 *10* **Cust Item ID:**

Required Date: 11/05/12 **Req'd Qty:** 10.00 *10* **Customer:**

Reference:

Approvals: **Process Plan:** _____ **Date:** _____ **Tooling:** _____ **Date:** _____ **Run Start** *NR1*

QC: _____ **Date:** _____ **SPC (Y/N):** _____ **Date:** _____ **Stop** *NR2*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
Draw Nbr	**Revision Nbr**								
D4640	~~A B~~ ECN12652 C								
100		0.00							
100						(10)	____	B13-1-13	
Waterjet	**Memo**	0.00							
FLOW CNC Waterjet	Cut as per dwg Prog Rev: C Dwg Rev: C Deburr as required	Punched							
110	QC2- Inspect parts off machine FAI/FAIB	0.00							
110						(10)	____	B13-1-13	
QC	**Memo**	0.00							
Quality Control									

Pto →

NCR: Yes / No

WORK ORDER NON-CONFORMANCE / UPDATE

DQA: ~~AW~~ 2013/02/01 Date:

QA Closed: ✓ Date: 1

Work Order: 89529

Part No. D 46/0-15

NCR No. 13-2271

DISPOSITION

Rework	
Scrap	
Use-as-is	X
Work Order Update	

AGAINST DEPARTMENT/PROCESS

Skid-tube		Crosstube		Water Jet	
Machining		Small Fab		Prod. Eng. Coor.	✓
Thermoforming		Finishing		Rec/Store/Packaging	
Large Fab		Composite		Supplier	

Engineering	X	
Quality		
Other		

Root Cause		Date	Step	Qty	Description of work order update or Non-conformance	Initial Chief Eng	Action Description	Sign & Date	Verification	QC Inspector
Doc/Data	X	13/1/22	100	10	One edge is off by as much as 1/8" Problem with program.	DAS 12 8-89 13/1/22	Acceptable Ref email	DAS 12 8-89 13/1/22	DAS 13/1/26	DAS 13/1/26
Equip/Tooling										
Operator										
Material										
Setup										
Other										
Process										
Supplier										
Training										
Unapproved										

FAULT CATEGORY

Landing Gear

	Bending
	Centre Not Concentric to O/S
	Cracks
	Crushed/Crimped
	Cuffs
	Heat Treat
	Inspection Strip in Tube
	Ripples in Bend
	Torque Waves in Extrusion
	Turning Sequence
	Wave/Twist in Tube

General

	Bend
	BOM/Route
	Broken/Damaged
	Burrs
	Contamination
	Countersink
	Cut Too Short
	Drill Holes
	Drawing
	Finish
	Folio

	Grain
	Hardware
	Inspection Incomplete
	Instructions Incomplete/Unclear
	Maintenance
	Mislabeled
	Misread
	Offset
	Out of Calibration
	Out of Sequence
	Outside Dimensions

	Ovalized
	Over/Under tolerance
	Part Incorrect
	Part Lost/Missing
	Part Moved
	Positioned Wrong
	Power Loss/Surge

	Pressure/Forced
	Temperature/Cure
	Weld
	Wrong Stock Pulled
X	Other

Problem with transfer from ~~to~~ DPK → Waterjet

H:/FORMS/Quality Assurance\approved QA/NCRWO Rev G

Work Order ID 89529

August-24-12 10:02:36 AM

89529

Item ID: D4640-15 **Accept** *N900040100* **Setup Start** *NS1*

Revision ID: **Stop** *NS2*

Item Name: Ceiling Protector

Start Date: 8/24/12 **Start Qty:** 10.00 *10*

Required Date: 11/05/12 **Req'd Qty:** 10.00 *10*

Reference:

Cust Item ID:

Customer:

Run Start *NR1*

Stop *NR2*

Approvals: **Process Plan:** _____ **Date:** _____ **Tooling:** _____ **Date:** _____

QC: _____ **Date:** _____ **SPC (Y/N):** _____ **Date:** _____

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
120	QC8- Inspect parts - second check	0.00				10			
120									
QC	Memo	0.00 13.1.16							
Quality Control	Use template to mark locations								
130	Identify as per dwg & Stock Location: FKG	0.00				10		13/1/25	
130									
Packaging	Memo	0.00							
Packaging									
140	QC21- Final Inspection - Work Order Release	0.00					MLS	13-01-25	
140									
QC	Memo	0.00							
Quality Control									

MLS 13-1-25

DQA: _____ Date: _____

NCR: Yes / No

WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: Date:

Work Order: _____

Part No. _____

NCR No. _____

DISPOSITION

- Rework ☐
- Scrap ☐
- Use-as-is ☐
- Work Order Update ☐

AGAINST DEPARTMENT/PROCESS

- Skid-tube ☐
- Machining ☐
- Thermoforming ☐
- Large Fab ☐
- Crosstube ☐
- Small Fab ☐
- Finishing ☐
- Composite ☐
- Water Jet ☐
- Prod. Eng. Coor. ☐
- Rec/Store/Packaging ☐
- Supplier ☐
- Engineering ☐
- Quality ☐
- Other ☐

Root Cause		Date	Step	Qty	Description of work order update or Non-conformance	Initial Chief Eng	Action Description	Sign & Date	Verification	QC Inspector
Doc/Data	☐									
Equip/Tooling	☐									
Operator	☐									
Material	☐									
Setup	☐									
Other	☐									
Process	☐									
Supplier	☐									
Training	☐									
Unapproved	☐									

FAULT CATEGORY

Landing Gear

- ☐ Bending
- ☐ Centre Not Concentric to O/S
- ☐ Cracks
- ☐ Crushed/Crimped
- ☐ Cuffs
- ☐ Heat Treat
- ☐ Inspection Strip in Tube
- ☐ Ripples in Bend
- ☐ Torque Waves in Extrusion
- ☐ Turning Sequence
- ☐ Wave/Twist in Tube

General

- ☐ Bend
- ☐ BOM/Route
- ☐ Broken/Damaged
- ☐ Burrs
- ☐ Contamination
- ☐ Countersink
- ☐ Cut Too Short
- ☐ Drill Holes
- ☐ Drawing
- ☐ Finish
- ☐ Folio
- ☐ Grain
- ☐ Hardware
- ☐ Inspection Incomplete
- ☐ Instructions Incomplete/Unclear
- ☐ Maintenance
- ☐ Mislabeled
- ☐ Misread
- ☐ Offset
- ☐ Out of Calibration
- ☐ Out of Sequence
- ☐ Outside Dimensions
- ☐ Ovalized
- ☐ Over/Under tolerance
- ☐ Part Incorrect
- ☐ Part Lost/Missing
- ☐ Part Moved
- ☐ Positioned Wrong
- ☐ Power Loss/Surge
- ☐ Pressure/Forced
- ☐ Temperature/Cure
- ☐ Weld
- ☐ Wrong Stock Pulled
- ☐ Other

_____

_____

_____

Picklist Print

August-24-12 10:02:36 AM

Work Order ID: 89529

Parent Item: D4640-15 **Start Date:** 8/24/12 **Required Date:** 11/05/12

Parent Item Name: Ceiling Protector **Start Qty:** 10.00 **Required Qty:** 10.00

Comments: IPP REV:A 12.05.08 NEW ISSUE DD VERF:EC

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
MLEXS.093-F6006-07 GE PLASTICS LEXAN SHEET		Purchased	No			100	sf	1,452.6700	**12.6**	**132.63158**			

Location	Loc Qty	Loc Code
therm	1452.67	
112176	40.44	
114459	1412.23	

8/31-1-13

114459

(10)

DQA: _____ Date: _____

NCR: Yes / No

WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: Date:

Work Order: _____

Part No. _____

NCR No. _____

DISPOSITION

- Rework ☐
- Scrap ☐
- Use-as-is ☐
- Work Order Update ☐

AGAINST DEPARTMENT/PROCESS

Skid-tube	☐	Crosstube	☐	Water Jet	☐	Engineering	☐
Machining	☐	Small Fab	☐	Prod. Eng. Coor.	☐	Quality	☐
Thermoforming	☐	Finishing	☐	Rec/Store/Packaging	☐	Other	☐
Large Fab	☐	Composite	☐	Supplier	☐		☐

Root Cause		Date	Step	Qty	Description of work order update or Non-conformance	Initial Chief Eng	Action Description	Sign & Date	Verification	QC Inspector
Doc/Data	☐									
Equip/Tooling	☐									
Operator	☐									
Material	☐									
Setup	☐									
Other	☐									
Process	☐									
Supplier	☐									
Training	☐									
Unapproved	☐									

FAULT CATEGORY

Landing Gear

- ☐ Bending
- ☐ Centre Not Concentric to O/S
- ☐ Cracks
- ☐ Crushed/Crimped.
- ☐ Cuffs
- ☐ Heat Treat
- ☐ Inspection Strip in Tube
- ☐ Ripples in Bend
- ☐ Torque Waves in Extrusion
- ☐ Turning Sequence
- ☐ Wave/Twist in Tube

General

- ☐ Bend
- ☐ BOM/Route
- ☐ Broken/Damaged
- ☐ Burrs
- ☐ Contamination
- ☐ Countersink
- ☐ Cut Too Short
- ☐ Drill Holes
- ☐ Drawing
- ☐ Finish
- ☐ Folio
- ☐ Grain
- ☐ Hardware
- ☐ Inspection Incomplete
- ☐ Instructions Incomplete/Unclear
- ☐ Maintenance
- ☐ Mislabeled
- ☐ Misread
- ☐ Offset
- ☐ Out of Calibration
- ☐ Out of Sequence
- ☐ Outside Dimensions
- ☐ Ovalized
- ☐ Over/Under tolerance
- ☐ Part Incorrect
- ☐ Part Lost/Missing
- ☐ Part Moved
- ☐ Positioned Wrong
- ☐ Power Loss/Surge
- ☐ Pressure/Forced
- ☐ Temperature/Cure
- ☐ Weld
- ☐ Wrong Stock Pulled
- ☐ Other

_____

_____

_____

DART AEROSPACE LTD	Work Order:	89529
Description: Ceiling Protector	Part Number:	D4640-15
Inspection Dwg: D4640 **Rev:** B C		Page 1 of 1

FIRST ARTICLE INSPECTION CHECKLIST

Drawing Dimension	Tolerance	Actual Dimension	Accept	Reject	Method of Inspection	Comments
18.80	+/-0.030	18.88	✓			T 1801
22.03	+/-0.030	22.03	✓			T
20.06	+/-0.030	20.06	✓			T
13.06	+/-0.030	13.06	✓			T
3.60	+/-0.030	3.604	✓			V B02
8.09	+/-0.030	8.09	-			V
20.86	+/-0.030	20.86	-			T
3.11	+/-0.030	3.11	-			V
7.27	+/-0.030	7.27	-			V
5.10	+/-0.030	5.10	-			V
4.85	+/-0.030	4.85	-			V
13.06	+/-0.030	13.06	-			T
1.50	+/-0.030	1.496	✓			V
5.00	+/-0.030	5.007	✓			V
57.46	+/-0.030	57.46	✓			T
82.37	+/-0.030	82.37	✓			T
Ø8.13	+0.012/-0.001	8.129	✓			V
6.77	+/-0.030	6.77	-			V
5.72	+/-0.030	5.72	-			V
6.13	+/-0.030	6.13	-			V
2.21	+/-0.030	2.21	-			V
0.88	+/-0.030	0.88	-			V
7.78	+/-0.030	7.781	✓			V
7.47	+/-0.030	7.486	✓			V
Ø0.375	+0.006/-0.001	.374	✓			T
9.73	+/-0.030	9.73	✓			T
21.00	+/-0.030	21.00	✓			T
31.28	+/-0.030	31.28	✓			T
4.00	+/-0.030	4.00	-			V
27.23	+/-0.030	27.23	-			T
22.28	+/-0.030	22.28	-			T
20.36	+/-0.030	20.36	-			T
0.093	+/-0.010	.094	✓ AS			V

Measured by:	JM	Audited by:	15 9-85	Preliminary Approval:	
Date:	13-1-13	Date:	13.1.16	Date:	

Rev	Date	Change	Revised by	Approved
A	12.09.26	New Issue	KJ	

DQA: _____ Date: _____

NCR: Yes / No

WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: Date:

Work Order: _____

Part No. _____

NCR No. _____

DISPOSITION

- Rework ☐
- Scrap ☐
- Use-as-is ☐
- Work Order Update ☐

AGAINST DEPARTMENT/PROCESS

Skid-tube ☐	Crosstube ☐	Water Jet ☐	Engineering ☐
Machining ☐	Small Fab ☐	Prod. Eng. Coor. ☐	Quality ☐
Thermoforming ☐	Finishing ☐	Rec/Store/Packaging ☐	Other ☐
Large Fab ☐	Composite ☐	Supplier ☐	☐

Root Cause		Date	Step	Qty	Description of work order update or Non-conformance	Initial Chief Eng	Action Description	Sign & Date	Verification	QC Inspector
Doc/Data	☐									
Equip/Tooling	☐									
Operator	☐									
Material	☐									
Setup	☐									
Other	☐									
Process	☐									
Supplier	☐									
Training	☐									
Unapproved	☐									

FAULT CATEGORY

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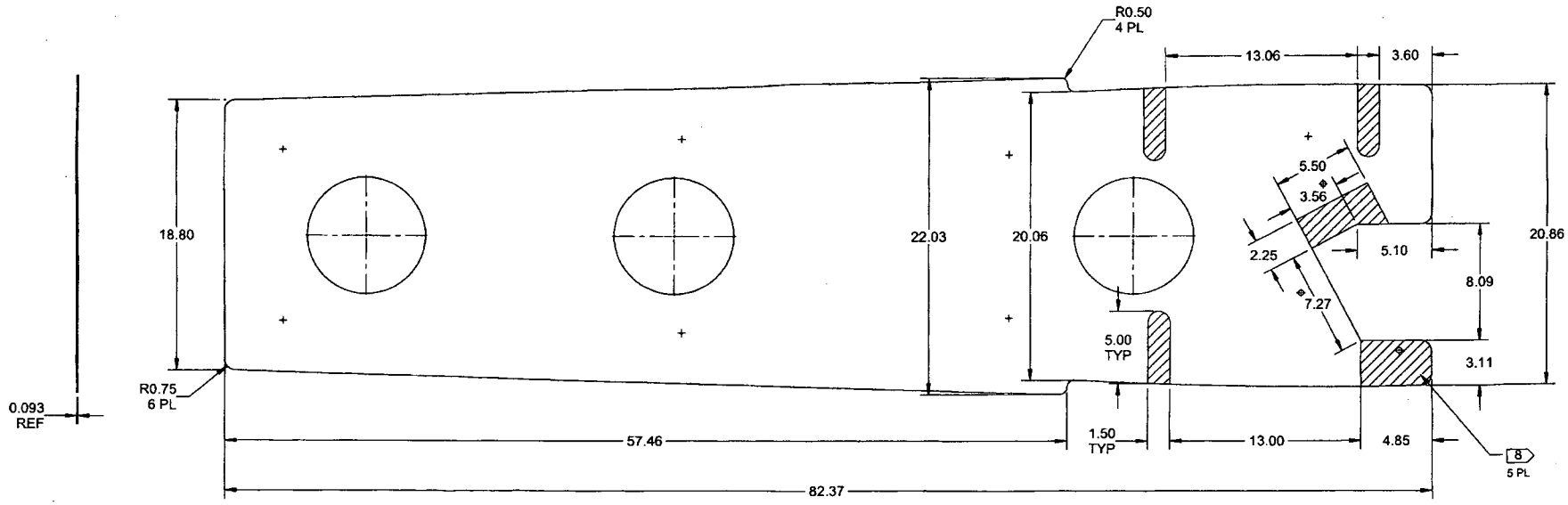
- ☐ Part Lost/Missing
- ☐ Part Moved
- ☐ Positioned Wrong
- ☐ Power Loss/Surge
- ☐ Pressure/Forced
- ☐ Temperature/Cure
- ☐ Weld
- ☐ Wrong Stock Pulled
- ☐ Other

_____

_____

_____



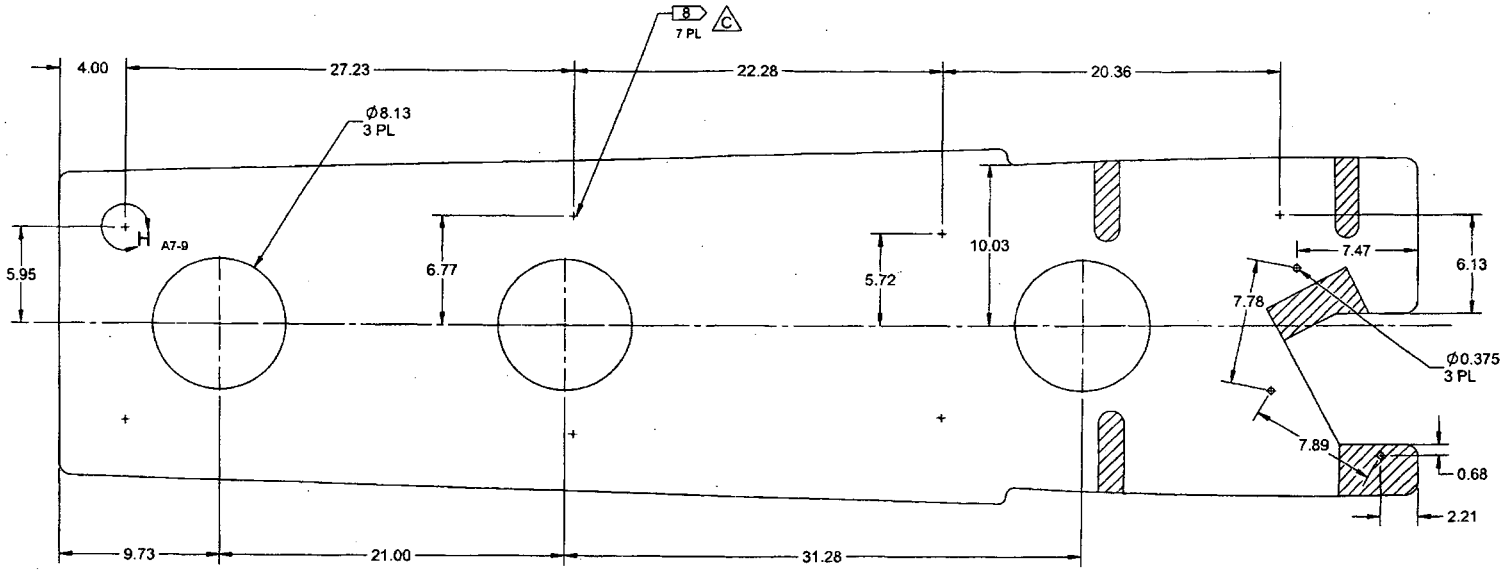
D4640-15 CEILING PROTECTOR
TEXTURED SIDE SHOWN

84529

RELEASED
2012 -11- 29

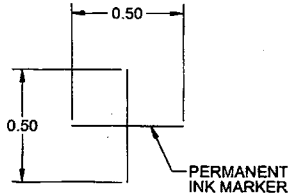
NOTES:
1) MATERIAL: F6006-GY5B133 GRAY LEXAN SHEET (SUEDE/POLISHED) 0.093 THICK
REF DART SPEC MLEXS.093-F6006-07
2) FINISH: N/A
3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
4) UNITS: INCHES UNLESS OTHERWISE NOTED
5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
6) IDENTIFICATION: IDENTIFY PER QSI 044 6.1 ON SMOOTH SIDE
7) WEIGHT: 5.99 lbs (TRIMMED WEIGHT = 5.78 lbs)
8) IF CUSTOMER REQUESTS "TRIMMED KIT" ON PURCHASE ORDER:
- DRAW 0.50" CROSS ON TEXTURED SIDE AT INDICATED LOCATIONS USING PERMANENT INK MARKER
- TRIM AND REMOVE SHADED AREAS △C

DESIGN	XDF	DART AEROSPACE LTD
DRAWN		HAWKESBURY, ONTARIO, CANADA
CHECKED		DRAWING NO. D4640 REV. C
MFG. APPR.		SHEET 8 OF 9
APPROVED		TITLE BAGGAGE PROTECTOR
DE APPR.		SCALE NTS
DATE	12.11.22	



D4640-15 CEILING PROTECTOR
SUPPLEMENTAL VIEW

RELEASED
2012 -11- 29



DETAIL H C7-9
NOT TO SCALE
TRIMMED KIT ONLY C

DESIGN	XDF	**DART AEROSPACE LTD** HAWKESBURY, ONTARIO, CANADA
DRAWN		DRAWING NO. D4640 REV. C
CHECKED		SHEET 9 OF 9
MFG. APPR.		TITLE BAGGAGE PROTECTOR
APPROVED		SCALE NTS
DE APPR.		
DATE	12.11.22	

Chris Provencal

From: David Shepherd <dshepherd@dartaero.com>
Sent: Friday, January 18, 2013 1:29 AM
To: 'Chris Provencal'
Cc: 'Mike Petsche'; 'Eric Downing'; 'David Duval'; 'L Lacelle'
Subject: RE: NCR D4640-15

Chris,

I agree that the parts are acceptable.

David

From: Chris Provencal [mailto:cprovencal@dartaero.com]
Sent: January-17-13 2:47 PM
To: David Shepherd
Cc: Mike Petsche; 'Eric Downing'; David Duval; 'L Lacelle'
Subject: NCR D4640-15

David,

There was an issue noticed during production of the latest batch of (36) D4640-15 protectors. When checking the parts to the template, it was noticed that there is up to a 1/8" deviation from the template along 30" on one edge. The arc of the curve is slightly off along that length, ref the attached photo. I made the decision as outlined below, and am sending this as an FYI in case you have any issues.

I've accepted the parts based on the fact that:

- Considering the function of the part, the 1/8" deviation is in line with what would be reasonable
- It has no effect on the function of the part
- Cosmetically I don't believe it will be noticeable when installed
- I am 99% sure that this is what Bell initially received and they raised no issue

The problem is in the waterjet program, which shows the deviation when overlayed with the template program. I verified that the DXFs are correct and there was no change to the program since the rev. B dwgs (currently rev. C). The problem must have been in the translation of the DXF's spline by the software. I have recreated the geometry without the spline and will provide production with an updated DXF that should have no issues.

I am wondering if this could be an issue for other files, when translating from Solidworks-> AutoCAD dxf -> Waterjet program.

-Chris